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SECOND BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA
ERTS PROJECT NO. 110-2
November 30, 1972

E7.2-10342
CR - 129656

- A. TITLE OF INVESTIGATION: Identification of Phenological Stages and Vegetative Types for Land Use Classification
- B. PRINCIPAL INVESTIGATOR/GSFC ID: C. Ivan Branton/UN 641
- C. PROBLEMS IMPEDING INVESTIGATION: The color-additive viewer under construction by project 110-1 has not been completed because of slow deliveries of certain components.

D. PROGRESS REPORT:

1. Accomplishments during reporting period:

Intermediate scale aerial photography taken by a NASA, Houston, NP3A plane was received for over 616 miles of flight lines. Coverage was obtained in 9 inch film with color positive and color IR. Black and white coverage corresponding to the four MSS bands was obtained on 6 inch film in both black and white negative and positive formats. The film has been examined and a method of indexing developed to show the map quadrat sheets to which the photography is pertinent.

Imagery from ERTS-1 continues to arrive and over 135 images have been scanned, indexed, and filed for convenient access.

An examination of the imagery throughout the season shows that by mid-October the 9.5X9.5 inch black & white ERTS-1 images appeared to be losing clarity because of low illumination levels. Significant too is the change in apparent detail visible to the naked eye. The early season imagery seemed to range in brightness in descending order as follows: Bands 7, 6, 5, & 4. Late season images were completely reversed with band 4 being brightest and band 7 quite dark.

With the color-additive viewer delayed in delivery, a dual projector lantern slide machine was obtained for projecting 70mm images. Color filters are on order and when obtained will permit the viewing of two superimposed images.

In cooperation with the photographic service of the University's Geophysical Institute two analytical techniques have been initiated. Black and white positive transparencies of three of the four spectral bands were produced in 10X enlargements of a section of photo 1033-21020. Identifiable physical features appear to be quite clear. Mountains, ridges, glaciers, and streams are readily identifiable. The entire photo, 1033-21020, was reproduced using six 3M color-key transparencies, three primary, and 3 complementary. Images obtained by combining the three primary colors and the three complementary ones revealed five distinguishable color shades representing vegetation dif-

(E72-10342) IDENTIFICATION OF
PHENOLOGICAL STAGES AND VEGETATIVE TYPES
FOR LAND USE CLASSIFICATION Bimonthly
Progress C.I. Branton (Alaska Univ.,
College.) 30 Nov. 1972 3 p CSCL 08M

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Unclass

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ferences. Aerial photographic coverage exists for approximately ten nautical miles of transect. A lack of distinguishing physical features has prevented positive correlation of the location of plant communities showing on both ERTS-1 imagery and aerial photography. This points up the importance of obtaining oblique low level photography in color at selected points on transects so that the correlation of observed color patterns is possible between intermediate level photography and ERTS imagery.

2. Plans for next reporting period:

The 3M color-key process will be used in studying Image No. 104920505 where a considerable amount of ground resource information exists and where prominent terrain features are available to locate indentifiable signatures. Further ground truth surveys will be conducted to confirm tonal differences observed in this image. When color additive viewing equipment becomes available image analysis will concentrate on images 104920505, 106620451, and 103321020.

E. SIGNIFICANT RESULTS:

See separate sheet.

F. PUBLICATIONS:

None

G. RECOMMENDATIONS:

None

H. CHANGES IN STANDING ORDER FORMS:

Original order date: 6/20/72

Revision date: 11/9/72

I. ERTS IMAGE DESCRIPTION FORMS:

Preparation of applicable forms will be completed within thirty days.

J. DATA REQUEST FORMS:

Nine track tape was requested on 11/22/72 for the following scenes:

104920505

106620451

103321020

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PRINCIPAL INVESTIGATOR: C. Ivan Branton

TITLE OF INVESTIGATION: Identification of Phenological Stages and Vegetative Types
for Land Use Classification

SUBDISCIPLINE: Agriculture/Forestry/Range Resources

SUMMARY OF SIGNIFICANT RESULTS:

Aerial Photography taken by a NP3A reconnaissance plane from NASA Houston in July 1972 was received, examined, and filed. Flight lines for the combined project transect totaled more than 616 nautical miles.

Two procedures for examining ERTS-1 imagery were investigated in cooperation with the photographic services section of the University's Geophysical Institute. Positive, 10X enlargements were produced of spectral bands 4, 6, and 7, for a portion of photo 1033-21020. Adequate detail remained to recognize physical features such as streams, glaciers, ice and snow. Also the entire image was studied using transparencies produced by the 3M color-key process. A combination of three complementary color combinations produced visually recognizable shades apparently indicating vegetation differences. Also lakes and glacial streams of sufficient size, ice and snow, and drainage patterns can be recognized.

From this work there is indicated a need for oblique low level color aerial photography in the vicinity of identifiable terrain features to assist in the positive location of vegetative communities appearing in the analysis process. In the primary areas of concern to this project identifiable man made features are conspicuous by their absence.

In Image No. 104920505 band 7 produced distinct tonal differences on a mountain slope to river bottom gradient. Further ground truth studies are required to determine the reasons of their differences.